UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH

National Severe Storms Laboratory
120 David L. Boren Blvd.
Norman, OK 73072

22 January 2024

Hazardous Weather Testbed Activities

The NOAA Hazardous Weather Testbed (HWT) at the National Weather Center (NWC) in Norman, Oklahoma, is seeking participants for ***several in-person* and virtual experiments*** in Spring 2024. The testbed is a joint project of the National Weather Service Storm Prediction Center and the National Severe Storms Laboratory that provides a conceptual framework and physical space to foster collaboration between research and operations to test and evaluate emerging technologies and science. This year, we will be conducting the 2024 HWT activities ***virtually and in-person*** for ***22 weeks*** in total.

There will be ***seven*** primary projects in the HWT during 2024. The details of the April–June experiments are listed beginning on page 3.

Radar Convective Applications **in-person*	Apr 15–19, Apr 22–26, May 6–10 **Application Deadline: Mar 4**
Convective Outlook Innovations **virtual* (Broadcasters and Emergency Managers)	Apr 16–18, Apr 23–25 **Application Deadline: Mar 4**
Threats-in-Motion (TIM) **in-person*	Apr 29–May 3, May 13–17, May 20–24 **Application Deadline: Mar 4**
Spring Forecasting Experiment **hybrid*	Apr 29–May 3, May 6–10, May 13–17, May 20–24, May 28–31 **Application Deadline: Mar 4**
Satellite Convective Applications **hybrid*	May 13–17, May 20–24, Jun 3–7 **Application Deadline: Mar 4**
Phased Array Radar **in-person*	August – Early September
Watch-to-Warning **in-person*	August – Early September

*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

All 2024 HWT activities will have virtual contingency plans using online resources such as Google Meet and AWIPS in the Cloud. Each project-specific application form can be found in the project details selection below.

Interest statements should include your motivation for evaluating future warning and/or forecast systems in the HWT and *demonstrate why you would be a good fit for a particular experiment*. NWS participants may include WFO, CWSU, or Region HQ staff, and participants are not required to have had prior HWT experience. We are seeking diversity among regions, warning and forecast experience, and HWT experience.

Any questions or concerns about these experiments or the application process should be directed to the HWT Executive Officer, **Tony Lyza (anthony.lyza@noaa.gov)**.

The deadline for the first round of applications is March 4, 2024. Candidates will be selected shortly thereafter.

We desire enthusiastic people who are interested in improving NWS warning and/or forecast decision-making technology, products, and services. We would be happy to provide more information about the HWT activities if requested.

Sincerely,
Tony Lyza
Hazardous Weather Testbed, National Severe Storms Laboratory

EWP Radar Convective Applications Experiment
Project Descriptions & Details

Click link to apply!

The deadline for applications is March 4, 2024. Candidates will be selected shortly thereafter.

WHEN – April 15–19, April 22–26, May 6–10

WHERE – Hazardous Weather Testbed, National Weather Center, Norman, OK
*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

WHAT – Selected candidates will participate in an in-person testbed where they will evaluate experimental radar products and issue convective warnings in AWIPS-II during live weather cases and select archived cases in displaced real-time. The products include:

- The Tornado Probability Algorithm (TORP). A machine learning single-radar product that detects and tracks potentially tornadic circulations.
- AzShear and DivShear: Single-radar rotation and divergence products.
- Phased-Array Radar (PAR) data for a single case.

In addition to these experimental products, standard observational and forecast products will also be available to participants. TORP will be the main focus of the experiment, with emphasis on the new short-term tornado forecast probabilities and new capabilities resulting from forecaster feedback from previous experiments. Experimental PAR data will be evaluated during a single case study. During the evaluation, forecasters will compose blog posts and provide verbal feedback regarding their use of the operational and experimental radar products in the warning decision-making process, along with any other thoughts and ideas to improve the products.

WHY – This HWT experiment provides an avenue to obtain forecaster feedback for new applications and products developed for the WSR-88D network. This evaluation will focus on the single-radar products TORP, AzShear, and DivShear. These products will be examined to gauge their effectiveness in predicting tornadoes and providing important situational awareness during severe weather operations.

WHO – All forecasters are welcome to apply for this experiment. We would like geographic, experiential, and gender diversity in our forecaster pool. Completion of the Warning Decision Training Division's Radar Applications Course and some operational severe weather warning experience is required.

EWP Threats-in-Motion (TIM)
Project Descriptions & Details

Click here to apply!

The deadline for applications is March 4, 2024. Candidates will be selected shortly thereafter.

WHEN – April 29–May 3, May 13–17, May 20–24

WHERE – Hazardous Weather Testbed, National Weather Center, Norman, OK
*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

WHAT – The National Severe Storms Laboratory (NSSL), Global Systems Laboratory (GSL), and NWS Meteorological Development Laboratory (MDL) have been developing a prototype severe convective weather warning-scale tool for testing the early concepts of the Forecasting A Continuum of Environmental Threats (FACETs) initiative. One important concept is Threats-In-Motion (TIM), a proposed warning decision and dissemination approach that would enable the NWS to upgrade severe thunderstorm and tornado warnings from the current static polygon system to continuously-updating warning polygons that move with the storm. TIM capabilities have been developed using an experimental version of AWIPS-2 Hazard Services (HS), first tested in the HWT in 2019, and to be tested again during the spring of 2024.

WHY – We hope to extend the dialog on FACETs and TIM as the concepts become closer to possible operational reality. In addition, we hope to collect the data necessary to make improvements to the HS software prior to a decision for operational implementation.

WHO – We would like geographic, experiential, and gender diversity in our forecaster pool. An interest in the evolution of forecast and warnings services is a must. Three forecasters will be chosen for each of the three weeks of the experiment. Completion of the Warning Decision Training Division's Radar Applications Course and some operational severe weather warning experience is desired.

For more information:
https://inside.nssl.noaa.gov/facets/2021/03/threats-in-motion/

EFP Spring Forecasting Experiment

Project Descriptions & Details

PIs: Israel Jirak (SPC) and Adam Clark (NSSL)

Click here to apply!

The deadline for applications is March 4, 2024. Candidates will be selected shortly thereafter.

WHEN – April 29–May 3, May 6–10, May 12–17, May 20–24, May 28–31 both in-person* & virtual

WHERE – Hazardous Weather Testbed, National Weather Center, Norman, OK & Online
*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

WHAT – The **Storm Prediction Center** (SPC) and the National Severe Storms Laboratory (NSSL) invite you to participate in experimental forecasting and evaluation activities either in-person or online as part of the annual HWT Spring Forecasting Experiment (SFE):

- Activities are formulated to provide evidence-based information on how best to design **convection-allowing models (CAMs) and ensemble systems** (the operational HREF evolved from these efforts), and to explore innovative ways to extract relevant information from CAMs and create calibrated probabilistic hazard guidance for high-impact weather events using **AI/ML** techniques.
- The SFE efforts support NOAA plans to develop a simplified, Unified Forecast System (UFS). The 3-km grid-spacing **Rapid Refresh Forecast System (RRFS)** will be evaluated against the **HRRR and HREF**, as it is scheduled to replace those systems in NWS operations in 2025.
- The focus of the experiment is directly aligned with NWS **FACETs and Warn-on Forecast** (WoF) programs, including examination of real-time forecasts from a prototype WoF ensemble system and **mesoanalysis** activities.
- To accomplish these goals, the SFE brings together major model development organizations in the US (EMC, GSL, NSSL, GFDL, and NCAR) to work collaboratively in improving community modeling for future implementation into NWS operations.

WHY – NWS forecaster participation in the HWT SFE is essential to facilitate meaningful interactions between the development and operational communities that will accelerate research-to-operations transitions. In particular, this provides opportunities for forecasters to provide feedback to ensure that new guidance, products, and visualization approaches meet their needs. This is a unique opportunity to see and influence the future of NWS forecasting tools for high impact weather.

WHO – Any **forecaster or SOO** who wants to be on the **cutting-edge of NWS science developments** please consider participating either in-person or virtually in the innovative, exciting SFE activities for one week during the **April 29–May 31** period.

EWP Satellite Convective Applications Experiment
Project Descriptions & Details

Click here to apply!

The deadline for applications is March 4, 2024. Candidates will be selected shortly thereafter.

WHEN – May 13–17 (in-person*), May 20–24 (in-person*), June 3–7 (virtual)

WHERE – Hazardous Weather Testbed, National Weather Center, Norman, OK & Online
*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

WHAT – Participants will issue experimental short-term forecast discussions, convective warnings, and impact decision support services products for a given County Warning Area using new and experimental satellite products and guidance using the AWIPS-II platform during live weather cases. Forecasters will participate in discussions with subject matter experts and compose blog posts during realtime operations regarding their use of the operational and experimental satellite products in the warning decision-making process. Feedback will also be captured through surveys and post-event group discussions. The experimental and operational satellite products most likely to be available include, but are not limited to:

- NUCAPS Temperature and Moisture Profiles
- OCTANE Speed and Direction Products
- PHS Mesoscale Model
- ProbSevere Hazard Model (version 3)
- ProbSevere LightningCast Model

WHY – This HWT experiment provides an operational demonstration of products and capabilities associated with the recently-launched GOES-R and JPSS series of satellites. This evaluation will gauge the effectiveness of the GOES-R training, test forecaster understanding of GOES-R/JPSS data, understand the usability and effectiveness of the visualizations in AWIPS, and identify best practices for integrating the new data into operations. Feedback received during GOES-R/JPSS product demonstrations will be integrated into training initiatives in coordination with the Warning Decision Training Division, the GOES-R/JPSS programs, and researchers for future product development and visualizations.

WHO – All forecasters are welcome to apply for this experiment. We would like geographic, experiential, and gender diversity in our forecaster pool. Training with IDSS concepts is preferred.